

In the Claims:

1. (Currently Amended) A router for a hierarchical communication network which is divided into a plurality of areas in each of which a plurality of said router are interconnected by links, comprising:

a first table having a plurality of entries respectively corresponding to reachable destinations, each of the entries including one of an intra-area indication and an inter-area indication ~~an intra-area or an inter-area indication~~ and an area identifier identifying at least one traversable area, said intra-area indication being associated with only one area identifier;

at least one second table ~~a plurality of second tables respectively corresponding to said~~ at least one traversable area ~~areas~~, each of said at least one second table ~~the second tables~~ holding quality-of-service (QoS) values of only the links of the corresponding at least one traversable area; and

a processor, responsive to a request signal specifying a destination and a QoS value, for making reference to one of the entries of the first table and said at least one second table ~~of the second tables corresponding to the specified destination~~, selecting links of the area identified by the area identifier of the referenced entry which links satisfy the specified QoS value, and performing a calculation according to a shortest path finding algorithm on the selected links to find a shortest path to the specified destination if the intra-area indication is included in the referenced entry, or performing said shortest path calculation on the selected links to find a shortest path tree in the identified area if the inter-area indication is included in the referenced entry and determining a route from the shortest path tree.

2. (Currently Amended) A router for a hierarchical communication network which is divided into a plurality of areas in each of which a plurality of said router are

interconnected by links, wherein neighboring ones of said areas are interconnected by at least one area border router, comprising:

a first table having a plurality of entries respectively corresponding to reachable destinations, each of the entries including one of an intra-area indication and an inter-area indication ~~an intra-area or an inter-area indication~~, an area identifier identifying at least one traversable area, and a list of area border routers if said inter-area indication is included, said intra-area indication being associated with only one area identifier;

a plurality of second tables respectively corresponding to a corresponding plurality of traversable areas ~~said areas~~, each of the second tables holding quality-of-service (QoS) values of the links of the corresponding traversable area; and

a processor, responsive to a request signal specifying a destination and a QoS value, for making reference to one of the entries of the first table and one of the second tables corresponding to the specified destination, selecting links of the area identified by the area identifier of the referenced entry which links satisfy the specified QoS value, and performing a calculation according to a shortest path finding algorithm on the selected links to find a shortest path to the specified destination if the intra-area indication is included in the referenced entry, or performing said shortest path calculation on the selected links until a shortest path tree is found for all routers of the list of the referenced entry or until an end of the calculation is reached when said tree is not found for all said routers if the inter-area indication is included in the referenced entry, and determining from the shortest path tree a route having an optimum QoS value.

3. (Currently Amended) The router of claim 2 ~~claim 1~~, further comprising a third table corresponding to a destination reachable via at least one traversable area, said third table containing a plurality of router identifiers identifying a plurality of area border routers and a plurality of QoS values of routes from said plurality of area border routers to the destination,

wherein said processor is configured to determine said route depending on said plurality of QoS values.

4. (Currently Amended) The router of claim 3, wherein said third table further contains a plurality of ~~two~~-hop count values of said routes from said plurality of area border routers to the destination, and wherein said processor is configured to determine said route to one of said plurality of area border routers depending on hop count values of said traversable area plus the hop count values of said third table.

5. (Currently Amended) A hierarchical communication network which is divided into a plurality of areas in each of which a plurality of routers ~~said router~~ are interconnected by links, each of said routers comprising:

a first table having a plurality of entries respectively corresponding to reachable destinations, each of the entries including one of an intra-area indication and an inter-area indication ~~an intra-area or an inter-area indication~~ and an area identifier identifying at least one traversable area, said intra-area indication being associated with only one area identifier;

a plurality of second tables respectively corresponding to said at least one traversable area ~~areas~~, each of the second tables holding quality-of-service (QoS) values of only the links of the corresponding area; and

a processor, responsive to a request signal specifying a destination and a QoS value, for making reference to one of the entries of the first table and one of the second tables corresponding to the specified destination, selecting links of the area identified by the area identifier of the referenced entry which links satisfy the specified QoS value, and performing a calculation according to a shortest path finding algorithm on the selected links to find a shortest path to the specified destination if the intra-area indication is included in the referenced entry, or performing said shortest path calculation on the selected links to find a

shortest path tree in the identified area if the inter-area indication is included in the referenced entry and determining a route from the shortest path tree.

6. (Currently Amended) A hierarchical communication network which is divided into a plurality of areas in each of which a plurality of routers are interconnected by links, wherein neighboring ones of said areas are interconnected by at least one area border router, each of the routers comprising:

a first table having a plurality of entries respectively corresponding to reachable destinations, each of the entries including one of an intra-area indication and an inter-area indication~~an intra-area or an inter-area indication~~, an area identifier identifying at least one traversable area, and a list of area border routers if said inter-area indication is included, said intra-area indication being associated with only one area identifier;

a plurality of second tables respectively corresponding to a corresponding plurality of traversable areas ~~said areas~~, each of the second tables holding quality-of-service (QoS) values of only the links of the corresponding traversable area; and

a processor, responsive to a request signal specifying a destination and a QoS value, for making reference to one of the entries of the first table and one of the second tables corresponding to the specified destination, selecting links of the area identified by the area identifier of the referenced entry which links satisfy the specified QoS value, and performing a calculation according to a shortest path finding algorithm on the selected links to find a shortest path to the specified destination if the intra-area indication is included in the referenced entry, or performing said shortest path calculation on the selected links until a shortest path tree is found for all routers of the list of the referenced entry or until an end of the calculation is reached when said tree is not found for all said routers if the inter-area indication is included in the referenced entry, and determining from the shortest path tree a route having an optimum QoS value.

7. (Original) The network of claim 6, wherein each of said routers further comprises a third table corresponding to a destination reachable via at least one traversable area, said third table containing a plurality of router identifiers identifying a plurality of area border routers and a plurality of QoS values of routes from said plurality of area border routers to the destination, wherein said processor is configured to determine said route depending on said plurality of QoS values.

8. (Currently Amended) The network of claim 7, wherein said third table further contains a plurality of two-hop count values of said routes from said plurality of area border routers to the destination, and wherein said processor is configured to determine said route to one of said plurality of area border routers depending on hop count values of said traversable area plus the hop count values of said third table.

9. (Currently Amended) A routing method for a hierarchical communication network which is divided into a plurality of areas in each of which a plurality of routers ~~said router~~ are interconnected by links, each of said routers comprising a first table having a plurality of entries respectively corresponding to reachable destinations, each of the entries including one of an intra-area indication and an inter-area indication ~~an intra-area or an inter-area indication~~ and an area identifier identifying at least one traversable area, said intra-area indication being associated with only one area identifier, and a plurality of second tables respectively corresponding to a plurality of traversable ~~said areas~~, each of the second tables holding quality-of-service (QoS) values of only the links of the corresponding traversable area, each of said routers functioning as a source router when a request signal is received, the method comprising the steps of:

- a) receiving, at the source router, a request signal specifying a destination and a QoS value and making reference to one of the entries of the first table and one of the second tables corresponding to the specified destination;
- b) selecting links of the area identified by the area identifier of the referenced entry which links satisfy the specified QoS value; and
- c) performing a calculation according to a shortest path finding algorithm on the selected links to find a shortest path to the specified destination if the intra-area indication is included in the referenced entry, or performing said shortest path calculation on the selected links to find a shortest path tree in the identified area if the inter-area indication is included in the referenced entry and determining a route from the shortest path tree.

10. (Currently Amended) A routing method for a hierarchical communication network which is divided into a plurality of areas in each of which a plurality of routers are interconnected by links, the routers of neighboring areas being interconnected by at least one area border router, wherein each of the routers functions as a source router when a request signal is received and includes a first table having a plurality of entries respectively corresponding to reachable destinations, each of the entries including one of an intra-area indication and an inter-area indication~~an intra-area or an inter-area indication~~, an area identifier identifying at least one traversable area, said intra-area indication being associated with only one area identifier, and a list of area border routers if said inter-area indication is included, and a plurality of second tables respectively corresponding to a plurality of traversable areas~~said areas~~, each of the second tables holding quality-of-service (QoS) values of only the links of the corresponding area, the method comprising the steps of:

- a) receiving, at said source router, a request signal specifying a destination and a QoS value, for making reference to one of the entries of the first table and one of the second tables corresponding to the specified destination;

- b) selecting links of the area identified by the area identifier of the referenced entry which links satisfy the specified QoS value; and
- c) performing a calculation according to a shortest path finding algorithm on the selected links to find a shortest path to the specified destination if the intra-area indication is included in the referenced entry, or performing said shortest path calculation on the selected links until a shortest path tree is found for all routers of the list of the referenced entry or until an end of the calculation is reached when said tree is not found for all said routers if the inter-area indication is included in the referenced entry, and determining from the shortest path tree a route having an optimum QoS value.

11. (Original) The method of claim 10, wherein each of said routers further comprises a third table corresponding to a destination reachable via at least one traversable area from said source router, said third table containing a plurality of router identifiers identifying a plurality of area border routers and a plurality of QoS values of routes from said plurality of area border routers to the destination, wherein the step (c) determines said route depending on said plurality of QoS values.

12. (Currently Amended) The method of claim 11, wherein said third table further contains a plurality of ~~two~~-hop count values of said routes from said plurality of area border routers to the destination, and wherein the step (c) comprises the step of determining said route to one of said plurality of area border routers depending on hop count values of said traversable area plus the hop count values of said third table.